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VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION
ST. CROIX, VIRGIN ISLANDS, U. S. A.
Under the supervision of the
UNITED STATES DEPARTMENT OF AGRICULTURE

REPORT OF THE VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION

1925

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VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION, ST. CROIX

[Under the supervision of the Office of Experiment Stations, United States Department of Agriculture]

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Washington, D. C. June, 1926

REPORT OF THE VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION, 1925

CONTENTS

	Page
Report of the director	1
Station improvements	2
Animal husbandry	2
Beekeeping	3
Field crops	4
Report of the horticulturist	6
Experiments with truck crops	6
Root crops	10
Report of the horticulturist—Continued.	
Orchard work	10
Miscellaneous work	12
Report of the agronomist	13
Sugar cane	13
Cotton	15
Sucrose content of sweet potatoes	16
Meteorological observations	16

REPORT OF THE DIRECTOR

By J. B. Thompson

During the fiscal year 1925 farming conditions in the Virgin Islands showed marked improvement over those of 1924. The abnormally dry weather which prevailed during the four previous years was happily broken, the annual rainfall as recorded at the station being 56.13 inches, which is about 10 inches higher than normal. Farm crops in general responded to the increased moisture supply. The production of sugar cane will amount to about 10,000 tons when the harvest is complete, whereas the average production for the immediately preceding 20 years was only 6,865 tons, and for the period 1921 to 1924, inclusive, 4,780 tons. Economic conditions in St. Croix showed general improvement. More money was put into circulation than formerly, higher prices were paid for beef animals on the Porto Rican market, and, as a result of improved conditions on the sugar-cane plantations, there was plenty of work for those desiring it.

In the animal husbandry division a number of calves were dropped in the station herd by native cows which had been bred to a grade Holstein bull. Several native cows were also bred to a registered Milking Shorthorn bull, and milk and butterfat production records were kept. Three registered Guernsey calves, introduced from the States in July, 1925, were received in good condition. Trap-nest records were continued in a study of egg production in the native fowl. A hen of purely local blood lines laid 182 eggs in 358 days and was still laying at the close of the period.

In the agronomy division a large number of varieties of sugar cane were grown, and data on growth, yield, and sucrose content were recorded. A paper mulch test was conducted to determine the effects of agricultural paper, when employed as a mulch, upon the yield and cost of producing sugar cane; and an experiment was begun to ascertain the comparative values of "flat land" and the old "bank and furrow" systems of planting cane. Spacing, thinning, and fertilizer tests were made with cotton to compare yields. Analyses of a number of different varieties of sweet potatoes showed that they varied between 3.5 and 5 per cent in sucrose content, with extremes both below and above these figures.

Horticultural activities included breeding and propagation experiments, demonstration work with fruits and vegetables, and a study of methods of controlling disease and insect pests. A number of economic plants were introduced during the year, and 50,196 vegetable plants and cuttings, 28 miscellaneous plants and cuttings, 1,857 papaya plants, and 342 packages of seeds were distributed.

STATION IMPROVEMENTS

The 67,837-gallon reservoir which was constructed in 1924 was enlarged to provide approximately 140,000 gallons of water, and the galvanized-iron watershed, having an area of 10,000 square feet and constructed in 1924 to collect water for storage in the large reservoir, was increased to 15,000 square feet. Since the additions provide a water-storage capacity of 183,000 gallons, a rainfall of little more than 20 inches will be ample to fill the storage reservoir.

Extensive repairs were made to the laborers' cottages during the year.

ANIMAL HUSBANDRY

Cattle

The registered Milking Shorthorn bull, imported in January, 1924, as a small calf, is in thrifty condition and weighed 920 pounds at the close of the year. Eleven cows were bred to him during the last nine months of the year.

The grade Holstein bull, introduced five years ago from St. Kitts, was again placed in service. The total of his get in the station herd numbers 21, of which 13 are heifers. None of the heifers have dropped calves, but the first is due to calve about September 12, 1925.

The high-grade Guernsey bull which was donated by the Porto Rico Agricultural Experiment Station in 1924 is now well grown, but has not yet been used in service. Two registered Guernsey heifer calves and one registered Guernsey bull calf were received in good condition from Maryland in July, 1925. In purchasing breeding stock from the States, the station endeavors to select animals not over 6 months old. Young animals from the Northern States survive exposure to tick fever better than older ones.

Table 1 gives the milk record of the station herd of native cows.

TABLE 1.—*Milk yields of native cows during the fiscal year 1925*

Name of cow	Length of time in milk during year	Total yield of milk
	Days	*Pounds*
Malvina	300	2,250
Mongoose	234	1,842
Agnes [1]	253	1,730
Beauty	209	1,489
Helen	242	1,374
Georgia [1]	234	957
Queen	207	595

[1] Agnes and Georgia were milked twice daily and their calves were fed from the pail. The other cows in the herd were milked only in the mornings, and their calves were allowed to follow them during the day.

Five heifers which were properly and regularly handled before calving, with the object of milking them without the calves, dropped their first calves during the latter part of the year. One of the heifers calved at the close of the year, but the others have been milking from three to five months without showing any inclination to withhold the milk. Table 2 gives the date of calving of the heifers, the number of days in milk, and the milk and butterfat yields.

TABLE 2.—*Milk and butterfat yield of heifers calving during the latter part of the fiscal year*

Name of heifer	Date of calving	Length of time in milk	Total yield of milk	Total yield of butterfat
		Days	*Pounds*	*Pounds*
Alma	Feb. 8	143	1,914	86.13
Blossom	Mar. 25	96	1,516	66.70
Cherry	do	96	1,370	57.50
Mary	Apr. 5	87	1,458	64.15

The heifers were milking at the rate of about 350 pounds each per month at the close of the year.

POULTRY

Trap-nest records were again kept of the station flock of native hens. The best record, made by a fowl of purely local blood lines, was 182 eggs in 358 days. The hen was still laying at the close of the period. No serious attempts were made to raise young chickens, but of more than 30 chicks hatched, all were brought to maturity, which would seem to indicate the high degree of vigor of the native stock. Poultry is subject to attack by the mongoose from the time of hatching until the birds are half grown.

BEEKEEPING

In 1924 three 3-frame nuclei of pure Italian strain were introduced from Porto Rico. One of these was lost soon after its arrival, and the second continued in a weak condition for several months and was lost after the wax moth entered the apiary. During the first year three new colonies were obtained from the one remaining nucleus, with a total production of 166 pounds of comb honey.

FIELD CROPS

CORN

Breeding work with corn, founded on a cross between improved local corn and Black Mexican sweet corn in 1919 was carried through the eighth generation. A type having comparatively well-fixed characters has been developed that is no more susceptible to injury by the corn leaf hopper (*Dicranotropis maidis*) and the corn ear worm (*Heliothis obsoleta*), the two worst pests of corn in the Virgin Islands, than is the local corn. As a table variety, however, it is still below the standard in quality. Breeding plats were established for the purpose of crossing the strain with its Black Mexican parent in the hope of effecting further improvement in quality. The cross was not made, however, since sufficiently vigorous plants of the Black Mexican parent were not obtained.

SWEET POTATOES

Of approximately 320 seedling varieties of sweet potato which were started during the seasons of 1922 and 1923, only 112 remained in the test of 1925. These were compared four times with their parents on single 50-foot row plats. A summary of the results from the four plantings showed that only 19 seedling varieties made an average production in excess of that of the parents, and that of this number only 7 consistently and in each and all plantings outyielded the parents. Of all the progeny, 1 in 17 showed improvement over the parent variety in productive capacity, but some of these have large, coarse roots, and split badly, or are otherwise undesirable. Several of the varieties standing among the highest in yield, however, appear to be desirable in other respects. Table 3 gives the average yield of the 19 high-producing seedlings and their parents in four plantings and the increase in yield of the seedlings over that of the parent controls.

TABLE 3.—*Average yield of 19 leading sweet-potato seedlings and their parent controls in four plantings*

Seedling No.	Average yield of seedlings		Average yield of parents		Increase in yield of seedlings over that of parents
	Per 50-foot row	Per acre	Per 50-foot row	Per acre	
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Per cent*
46	106	23,086	80.0	17,424	32.5
82	82	17,859	65.5	14,266	25.0
31	109	23,740	88.0	19,166	24.0
26	106	23,086	86.0	18,731	23.0
72	104	22,651	87.0	18,949	20.0
162	95	20,760	80.0	17,424	19.0
11	93	20,325	79.5	17,315	17.0
80	109	23,740	93.0	20,235	17.0
225	86	18,731	74.0	16,117	16.0
15	113	24,611	101.0	21,998	15.0
28	96	20,980	85.0	18,493	13.0
108	102	22,216	93.0	20,325	10.0
266	111	24,176	101.0	21,998	9.0
75	91	19,820	86.0	18,731	6.0
173	106	23,086	100.0	21,780	6.0
292	102	22,216	98.0	21,344	4.0
45	81	17,642	78.0	16,988	4.0
140	90	19,602	88.0	19,166	2.0
156	82	17,859	80.0	17,424	2.0
Average	98	21,378	86.5	18,835	13.3

Another series of 1,204 sweet-potato seedlings was grown during the year, and 975 of the more vigorous of these were planted in the field. This lot will be subjected to rigorous selection, and the more promising ones will be retained for further planting.

Carefully controlled pollination experiments with the sweet potato were conducted for the first time at the station during the year. The work was largely of a preliminary character, and a relatively large number of crosses was made. Some 545 individual flowers were artificially pollinated. Fifty-four, or 10 per cent, of the pollinations were successful and resulted in the formation of seedballs, yielding in all 76 seeds. Much variation was observed in the success of the different crosses. None of 62 pollinations of seedling No. 311 with the Black Rock variety, for instance, were successful. On the other hand, 8 of 15 pollinations of seedling No. 266 with Key West were successful. From an economic standpoint, it was observed that a number of the more desirable varieties failed to produce many flowers, and in some instances the variety could not be employed generally, even as a pollen parent, because it produced too few flowers.

Pollination work was carried on during February by the director, assisted by Francisco Quinones, temporarily with the station. The unopened flower buds of the pistillate parent were emasculated and bagged on the day preceding pollination. Unopened buds from the staminate parent were also collected and their stems immersed in a jar of water. These buds opened during the night and were ready to provide pollen for crossbreeding on the following day. The method followed permitted of protecting the open flowers from insects carrying pollen from other sources, and made it unnecessary to bag flowers from which pollen was to be obtained. Successful crosses resulted in the production of seed balls which matured in 25 to 35 days from the date of pollination. The seeds developed in the work have not yet been planted.

At harvest time a bud mutation was discovered in a plat of the seedling variety No. 264. The variety has a dark red root normally, but in this instance it bore a root of light rose color and others of normal color. This is the second mutation of the kind occurring in the breeding work of the past four years. In the first instance a plant of the Bigwig variety produced in 1922 a white root and normal red ones. Since the work has been conducted uniformly on 50-foot units with exactly 50 hills to the plat, a fairly accurate calculation of the total number of plants grown during the four-year period and dug separately hill by hill, is possible; and the figures thus arrived at show that one mutation effecting the root color character has been observed for each 30,000 plants examined, or for the equivalent of a commercially planted area of about 3 acres.

Yields of sweet potatoes from control plats started in 1924 and 1925 should indicate to some extent what the production possibilities of the crop are under St. Croix conditions. The plats have been widely distributed over the fields covering a period of two years, during which time four distinct plantings were made, and have occupied uniform areas with adjacent rows planted to other varieties at measured distances of four feet. Table 4 gives the yield of three varieties of sweet potatoes on varying numbers of plats during the two-year period.

TABLE 4.—*Yields of different varieties of swee ιpotatoes on varying numbers of plats during a period of two years*

Variety	Number of plats	Average yield from a 50-foot row	Calculated yield per acre
		Pounds	*Pounds*
Black Rock	40	90.2	19,646
Bigwig	40	83.8	18,252
Key West	14	54.6	11,891

SWEET-POTATO WEEVIL CONTROL

During the years 1922 and 1923 the sweet-potato plantings at the station were free from attack by the West Indian sweet-potato weevil (*Euscepes batatas*), but in 1924 the crop was planted on ground adjacent to the laborers' provision grounds, whence vine cuttings were carried from infected sources. As a result, 260 or more varieties were found infested with the weevil at harvest time. Tubers of all the varieties were crated and stored in a room preparatory to fumigating them with carbon bisulphide. The building was not so tightly fitted as might have been desired, and 1 pound of the fumigant was used to very 200 cubic feet of space. Where tight containers are available for use in fumigation the amount of carbon bisulphide may be reduced to 1 pound for every 1,000 cubic feet of space. Fumigation was continued for 48 hours and repeated seven days later to kill any weevils hatching after the first treatment. Draws were grown from the roots of 115 of the fumigated varieties for use in the 1924–25 work, which were, of course, transferred to noninfested ground. No infestation occurred during the year.

LEGUMES

Trial plantings of garden peas, field beans, and Kentucky Wonder pole beans, with and without inoculation, resulted in no increase in yield due to seed treatment. Two commercial preparations and a culture received from the United States Department of Agriculture were used in the work, but apparently none of the inoculants affected growth or increased the yield of seed, nor was the color of the vegetative growth perceptibly changed. Small plantings of common and Hairy Peruvian alfalfa made late in 1923 were in good condition in June, 1925. Hairy Peruvian continues to prove more vigorous and to make heavier yields than the ordinary sort. Additional plantings of these alfalfas during the year showed similar advantages in favor of the Hairy Peruvian strain.

REPORT OF THE HORTICULTURIST

By W. M. PERRY

EXPERIMENTS WITH TRUCK CROPS

The general results of varietal experiments conducted during the year confirm those previously noted. It is found that the majority of vegetables growing in the Temperate Zone can be successfully grown in the Virgin Islands. A number of vegetables were tried for the first time. A small planting of salsify, or oyster plant, made October 4, yielded roots of excellent quality during the middle of January. Salsify is deserving of general planting in the Virgin Islands. Several roots of rhubarb were planted, but after making vigorous growth for a short time they became unthrifty and failed. Asparagus likewise proved a failure. The plants develop into numerous spindling shoots unfit for use. Globe artichoke seed was planted in December and the resulting plants were set in the garden in January. The plants are promising at this writing (July, 1925). A dozen hills of roselle yielded 6¼ pounds of fruit. Five pounds each of Irish Cobbler, Spaulding No. 4 (Rose No. 4), and Triumph (Bliss Red Triumph) varieties of potato were planted February 9. The season being late, however, satisfactory results could hardly be expected. Of the three varieties, Bliss Red Triumph gave the best results. It is planned to conduct another test of this variety under more favorable conditions.

TOMATOES

Tests with tomatoes were made to determine whether the fruits of several well-known varieties deteriorate through the continued planting of home-grown seed. The seed was saved from fruits of last year's crop and planted alongside of freshly imported seed for comparison. One 50-foot row containing 12 hills was planted to each variety. Table 5 gives the results of the test:

TABLE 5.—*Comparison in yield of several varieties of tomatoes from home-grown and imported seed*

Variety	Source of seed	Number of fruits	Weight of fruits	Excess number of fruits	Excess weight of fruits
			Pounds		*Pounds*
Stone	Station	376	92.3		
Do	Imported	447	99.9	71	7.6
Bonny Best	Station	332	117.3		
Do	Imported	516	122.0	184	4.7
Duke of York	Station	451	108.0		
Do	Imported	474	109.5	23	1.5
June Pink	Station	362	80.1	32	
Do	Imported	330	87.1		7.0
Ponderosa	Station	136	55.1	29	10.0
Do	Imported	107	45.1		
Chalk's Early Jewel	Station	382	97.0	18	12.0
Do	Imported	364	85.0		

BEANS

The effort to eliminate the objectionable black mottled color of the Florida butter bean by repeated selective plantings has been succesful. The work had to be carried through four generations to accomplish this result. Because of its apparent drought-resistant qualities, the bean known locally as the Forida butter bean seems especially well adapted to the Virgin Islands, where long periods of light rainfall frequently occur.

CUCUMBERS

The varieties Early Fortune and Improved Long Green were planted to determine their respective yields and to learn whether the fruit would keep in good condition for a period sufficient to transport it from St. Croix to the States. Of the two varieties Early

Fortune proved by far the better yielder, producing at the rate of 62,181 fruits per acre. Improved Long Green yielded 17,388 fruits per acre, and in form and manner of growth was distinctly inferior to Early Fortune. A bushel box which was filled with the fruit to test its keeping quality was securely fastened as in preparation for shipment, and kept in a room having a temperature ranging between 81° and 83° F. at noon. At the end of seven days when the box was opened, 5 per cent of the fruits showed a yellowish cast and one fruit had slightly decayed. Preparation is being made to plant sufficient cucumbers for trial shipment to New York. Cucumber growing has been handicapped by severe attacks of aphids (*Aphis gossypii*) and melon worms (*Diaphania hyalinata*). To combat these pests, nicotine sulphate (40 per cent solution) was used in the strength of 1 part to 800 parts, by volume, of Bordeaux mixture in which arsenate of lead at the rate of 2 pounds to 50 gallons of the Bordeaux had been incorporated. This preparation effectively destroyed the aphids and melon worms and also prevented fungus disease.

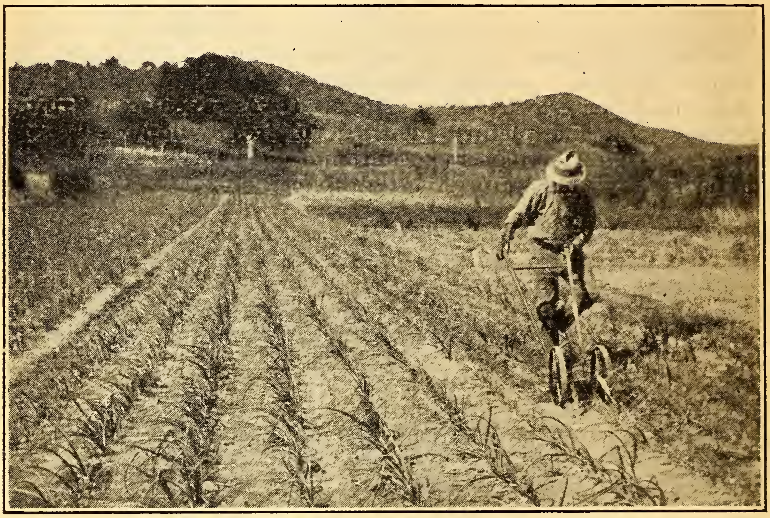

FIG. 1.—Yellow Bermuda onions. Wheel-hoe cultivation

Pickling cucumbers were again tested at the station at the request of a New York pickling company. The variety known as Chicago Pickling was the best of six varieties tested last year. To learn the effect of fertilizer on yield, seed of this variety was sown on three plats, one receiving manure at the rate of 4 pounds per hill, the second 4:8:6 commercial fertilizer composed of dried blood, muriate of potash, and acid phosphate at the rate of 3 ounces per hill, and the third no treatment (control plat). The plat receiving the barnyard manure produced 160 fruits, that receiving the commercial fertilizer 55 fruits, and the control plat 56 fruits.

ONIONS

Encouraged by the consistent success with Bermuda onions during several years at the station, it was decided to arrange for a more extensive planting this year to obtain production data from a larger area and to learn whether the crop could be profitably marketed on the mainland. To this end a half-acre plat was planted with the Yellow Bermuda variety, the plants being set 7 inches apart in rows 18 inches apart. Preparatory to planting, a top-dressing of manure was disked into the ground, and drainage furrows were provided about every 15 feet. The plants were grown in specially prepared seed beds, and cultivation was done almost entirely with a hand-wheel hoe. (Fig. 1.) A blight which threatened the crop when half grown was controlled by three sprayings with a 4 : 4 : 50 Bordeaux mixture. On November 20 the plat was given a top-dressing composed of 49.5 pounds of dried blood, 34.5 pounds of nitrate of soda, 131 pounds of 17 per cent acid phosphate, and 22 pounds of muriate of potash. Immediate rains caused the fertilizer to become available quickly, which probably accounted for the larger percentage of "splits" in the crop. A yield of 12,000 pounds was obtained from the half-acre plat.

The gross income from sales made to local buyers, and in St. Thomas, Porto Rico, and New York amounted to $483.25. Trial shipments to New York were made in boxes, which are not looked upon favorably by the New York trade. However, the income was satisfactory. A statement is given in Table 6 of the cost of growing the crop.

TABLE 6.—*Cost of growing 12,000 pounds of Bermuda onions on a half-acre plat*

Labor:		
Preparing seed bed and growing sets	$3. 95	
Preparing land for planting	5. 90	
Setting out plants	4. 50	
Top-dressing with fertilizer	. 15	
Cultivating	2. 75	
Spraying	4. 00	
Harvesting	6. 42	
Sorting and packing	7. 12	
Total cost of labor		$34. 79
Materials:		
Seed	5. 00	
Fertilizer for seed beds	1. 03	
Spraying material	3. 70	
Fertilizer for top-dressing	4. 97	
Barnyard manure	5. 30	
Total cost of materials		20. 00
Total cost of labor and material		54. 79

The shipment made March 13 brought an average price of $3 per package (1 bushel each). The cost of marketing per package, including crate, packing, freighting, lighterage, and commission, was $1.21. The cost of production per package was 22 cents, which sum plus the cost of marketing brought the total cost to $1.43 each. This, at the selling price of $3 yielded a profit of $1.57 per package.

As a result of the experiment it is thought that Bermuda onions produced in the Virgin Islands can be profitably shipped to the New York market.

ROOT CROPS

YAMS

Because of the importance of the yam as a food crop, it was deemed advisable to conduct experiments to learn what varieties are best adapted to the Virgin Islands. Roots of six varieties were received from the Porto Rico Agricultural Experiment Station at Mayaguez, and planted May 8, 1924. Of the six, variety S. P. I. No. 47001 did best, yielding 42 pounds, or on the average 8.4 pounds per hill, but the roots penetrated so deeply that they were difficult to harvest without breaking. The Potato yam produced 41 pounds, or on the average 5.2 pounds per hill, and the roots were of excellent quality This variety is worthy of trial by those who like the yam roasted whole. Tongo (S. P. I. No. 31923), which closely resembles the Potato yam but is hairier and slightly larger, yielded 17.2 pounds, or on the average 3.4 pounds per hill. Forty-six hills of Seal Top, a locally grown variety, yielded 227¾ pounds, or on the average 4.9 pounds per hill. This variety is smooth, and has white flesh and fine cooking qualities. It can be harvested easily, since its roots form near the surface.

TANNIAS

Small plantings of the varieties locally known as White and Crab Island were made during the year. Little difference was observed in their manner of growth and yield. The White variety apparently has been grown locally for years, whereas the Crab Island is of recent introduction from Barbados. Further experiments are necessary to determine their relative merits.

ARROWROOT

Two tubers of Queensland arrowroot (*Canna edulis*), S. P. I. No. 46313, were planted in March, 1924, and made good growth and produced 4½ and 8 pounds, respectively, of tubers, notwithstanding the fact they were blown down by a storm in September.

TARO

Tubers of *Colocasia* spp. were received from the Plant Introduction Field Station, Brooksville, Fla., but arrived in too poor condition for use.

ORCHARD WORK

Mulberry, banana, and plum trees were introduced from Florida during the year. The older plantings in the orchard are doing fairly well. One of the avocado seedlings is starting to bear, and some of the peaches are blooming. The figs bore a few fruits. Continual spraying is necessary to keep scale insects under control. The soil in the orchard is being improved by alternate plantings of pigeon peas and jack beans, and by mulching with coarse barnyard manure which is later worked into the soil. Commercial fertilizer is also used sparingly.

The grapes introduced from Texas are starting with difficulty and are very chlorotic. The vines are growing on soil which is not well adapted to grapes. However, an experiment is under way with a variety found growing about some of the local dwellings.

The pineapple experiment started two years ago is an absolute failure, owing to the calcareous nature of the soil in which the crop is growing. The acre plat at Butler's Bay (fig. 2), planted in cooperation with the station, clearly demonstrates the possibility of profitably producing pineapples outside the limy areas of the island. The pineapple might prove a money-making crop were enough plantings made to warrant the establishment of a cannery.

FIGS

In view of the fact that the common fig thrives here, it is thought that the Smyrna fig of commerce might also prove successful. Cuttings of this variety (Lob Ingir), known in California as the Calimyrna, were obtained for rooting. Six varieties of the caprifig are also being tried, and at the proper time the fig wasp (*Blastophaga psenes*) will be imported for caprification. The eastern half of the garden was plowed to receive some of the young trees, and the area south of the orchard will be planted with others. In addition to the Calimyrna or Lob Ingir, cuttings of the Kadota and Mission are being rooted.

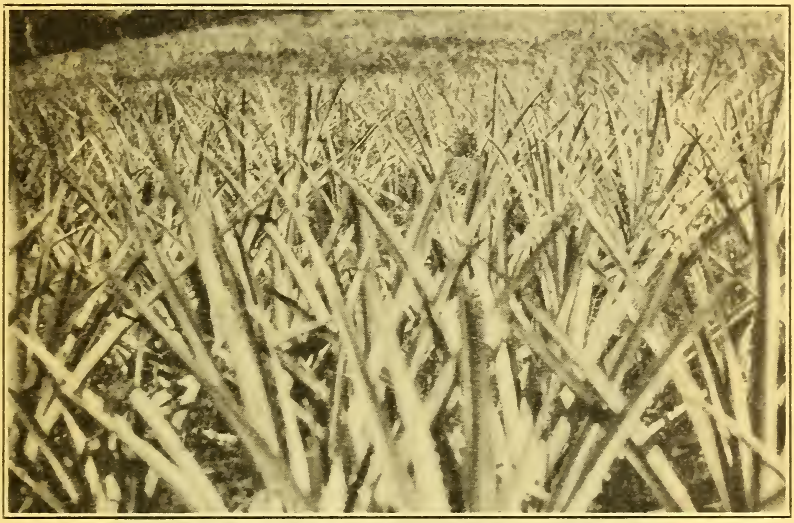

FIG. 2.—Pineapple planting at Butler's Bay

BANANAS

There are a number of low areas in the Virgin Islands which could be devoted to banana culture. The fruit has been grown to a limited extent for some years on several of the plantations, but the plantings have been neglected. Twenty plants of the local type were set out in the fall of 1924 to study their behavior under improved methods of cultivation. (Fig. 3.) Some of them are now bearing. These plants resemble the Cavendish variety in habit of growth. During the year a few plants of Hart's Choice and Cavendish were imported from a nursery in Florida.

MISCELLANEOUS WORK

New specimens were added to the arboretum during the year. Many of the plants which have been introduced from various parts of the tropical world already indicate their adaptability to island conditions. Each plant is properly staked and bears a label giving its scientific and common name, accession number, and year of planting. A complete record is kept of each species, together with notes which are made from time to time. Herbarium specimens are preserved and retained as a part of the records.

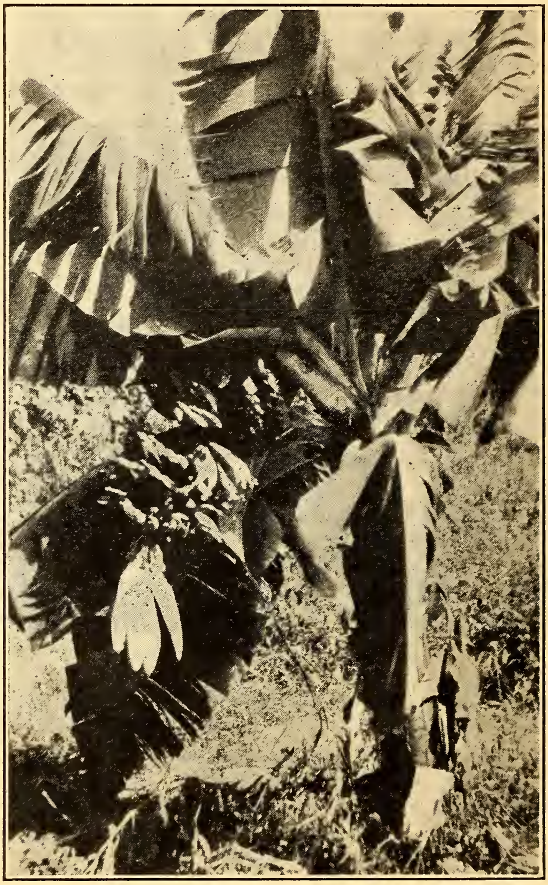

FIG. 3.—Banana, nine months from slip

The eucalyptus trees continue to make wonderful growth. One specimen tree of *E. rostrata* at 32 months from seed is 16 feet high and has a circumference of 8¾ inches (fig. 4). The casaurinas also are growing rapidly, and the Honduras mahogany is outstripping in growth the common West Indian species. An ornamental plant (*Solandra longiflora*) has produced a number of blossoms. The development of the many introductions is watched with much interest.

A large plat was planted with mahogany seed for the production of trees with which to continue reforestation work. Experience has shown that a much larger number of small plants live when transplanted than large ones. Seed must be sown at a time enabling the resulting plants to be ready for transplanting in the fall.

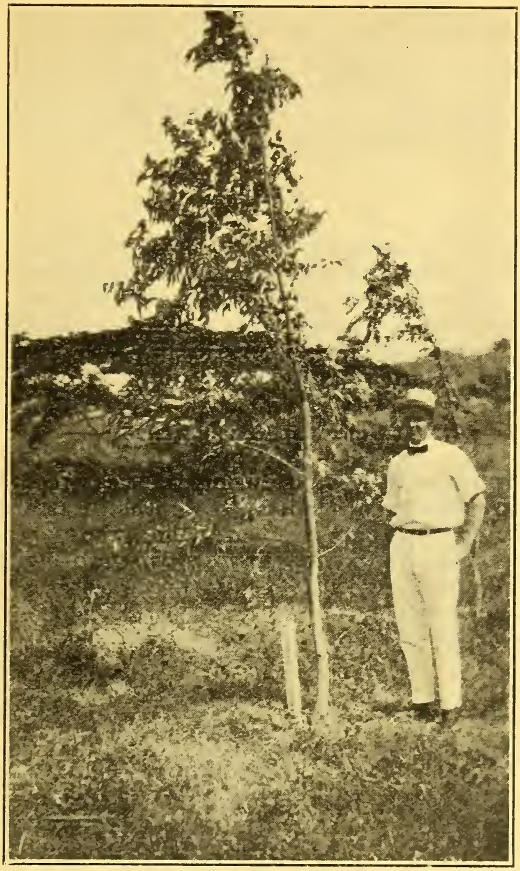

FIG. 4.—*Eucalyptus rostrata*, 32 months from seed

REPORT OF THE AGRONOMIST

By M. S. BAKER

SUGAR CANE

Some data on the growth, yield, and sucrose content of the different varieties, together with propagating material for enlarging the area under cultivation, have been obtained from a limited quantity of cuttings of 18 varieties of cane which were introduced from St. Kitts in 1923. Twenty or more varieties were introduced from Porto Rico during the year, and several kinds were obtained from the Bureau of Plant Industry, United States Department of Agriculture. Original importations usually consist of very few cuttings of each variety, and some time is required to propagate sufficient material for planting experimental plats. Growing introductions in quarantine in St. Thomas for several months before shipping them into St. Croix also retards experimental work, but is necessary to prevent disease and insect-pest importation. The different varieties now growing in the test fields at the station include African, A 2, B 147, B 376, B 3750, B 6388, Ba 6032, Ba 7924, BH 10 (12), [1]BK 6, BK 12, BK 15, BK 19, BK 33, Cayana–10, Crystalina, D 109, D 116, D 117, D 1135, Hill Seedling, Kassoer, Oshima, POJ 213, POJ 238, POJ 234, POJ 826, POJ 979, POJ 2379, PR 328, PR 358, PR 412, PR 417, PR 543, PR 545, PR 701, PR 704, PR 707, PR 708, PR 710, PR 722, PR 726, PR 729, Rayada, SC 12/4, SC 13/13, Uba, and White Tanna.

Seedlings

A few seedlings of each of the 1922 and 1923 series are growing in the test fields. Since, however, all the seedlings have been nursed through a prolonged period of drought, analytical tests have not been made and little has been accomplished in segregating the more desirable numbers. Cane arrows collected during the year bore no viable seed, and efforts to grow additional seedlings were therefore unsuccessful.

Cultural Experiments

The first crop was harvested during the year from plats of cane grown in furrows between "banks," as is the local practice, and on level land treated with paper mulch. One grade of paper made in strips 36 inches wide was compared with two grades of paper each 18 inches wide. Table 7 gives the results of the test.

Table 7.—*Comparison of yield and sugar content of cane grown under different methods of culture*

Treatment of plat	Yield			Analysis of juice			Sucrose per acre
	Weight of cane per acre	Juice extracted per acre		Brix reading	Sucrose content	Coefficient of purity	
	Tons	*Per cent*	*Pounds*	*Degrees*	*Per cent*		*Pounds*
Banked (control)	24. 22	58. 5	28, 340	19. 3	18. 0	93. 26	5, 101
Leveled and mulched with paper 36 inches wide [1]	30. 10	48. 0	28, 901	19. 8	18. 6	93. 93	5, 375
Leveled and mulched with No. 1 paper 18 inches wide	28. 19	56. 0	31, 582	20. 2	18. 0	89. 10	5, 684
Leveled and mulched with No. 2 paper 18 inches wide	25. 50	54. 5	27, 802	21. 8	20. 0	91. 74	5, 560

[1] A hurricane occurring some months before harvest caused this cane to lodge badly and probably accounts for its low content of juice.

To determine whether or not the practice of using paper mulch is to be recommended, it was decided to compare the increase in cost of production with the value of the increase in yield of crop. Table 8 gives the results of the comparison.

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[1] The BK varieties were introduced from St. Kitts in 1923. The letter "B" represents the Brighton plantation, owned by Mr. Yearwood, who in cooperation with Mr. Shepherd, the government superintendent of agriculture, developed this series of seedlings.

TABLE 8.—*Comparison of the increase in cost of production due to the use of paper mulch, with the value of the increase in yield of crop*

Treatment of plat	Weight of cane per acre	Gross return per acre[1]	Cost of paper per acre	Return per acre after deducting cost of paper
	Tons			
Banked (control)	24.22	$108.48		$108.48
Leveled and mulched with paper 36 inches wide	30.10	136.07	$150.50	−14.43
Leveled and mulched with No. 1 paper 18 inches wide	28.19	127.43	69.65	57.78
Leveled and mulched with No. 2 paper 18 inches wide	25.50	115.29	49.00	66.29

[1] The crop of cane was sold at $0.226 per 100 pounds.

Since cuttings from very mature canes often "germinate" unsatisfactorily, a test was begun to learn whether sucrose determination could be used at any given time as an index of the quality of cane for planting. Fallow and crop rotation tests and one dealing with labor costs were also started. Tests made to determine the effect on yield of planting on level land, between "banks," and under different methods of cultivation must be carried through several years before yielding conclusive results.

COTTON

Approximately 150 acres in St. Croix was planted with cotton during the season 1924–25, but the crop was a disappointment owing to the ravages of the pink bollworm. Seed for planting was introduced from Barbados in 1923, following a two-year closed season, and resulting plants bearing heavy crops with lint of superior quality and length were selected for further work by the station. Seed of selections making heavier yields than the general crop will be planted in increase plats during the coming season. Further selections were made from the 1924–25 crop.

Only sea-island cotton is grown commercially in St. Croix. This variety was therefore grown in comparison with Barbados Native and Pima to learn their relative yields. Sea-island cotton produced on the average about 528 pounds of seed cotton per acre, Pima cotton gave an unsatisfactory stand, although some of the plants made good yields, and Barbados Native made the poorest showing.

SPACING AND THINNING TEST

During the year a spacing and thinning test was conducted on two series of plats to ascertain the effect on yield of close planting under pink bollworm conditions. In one series of plats the rows were spaced 4 feet apart, and in the other 3½ feet apart. Under local practice cotton is planted 3 feet apart in rows 4 feet apart. In each series of plats the plants were spaced 36, 24, 15, 8, and 6 inches apart, respectively. All plantings were duplicated. The results of the first year showed a distinct advantage in yield in favor of close planting. The plat on which the plants were spaced 3½ by ½ foot made the highest yield, producing at the rate of 929.9 pounds of seed cotton per acre, which is an increase of a little more than 61 per cent over the yield obtained from the usual 48 by 36 inch methods of planting.

The plats with plants spaced 6 and 8 inches apart in the row made the highest yield in all cases. A slight advantage in favor of close planting was observed in percentage of lint, but no difference was noted in length of fiber. Each plat consisted of three rows. Row No. 1 was thinned when the first true leaves were formed; row No. 2 when the plants were 6 inches high, and row No. 3 when the plants were 12 inches high. Early thinning gave the best results.

FERTILIZER TESTS

The fertilizer tests were seriously interfered with by a 17-inch rainfall during three days following the application of fertilizer to the crop. Indications are, however, that applications of nitrogen will increase the yield of cotton.

INSECT PESTS

The pink bollworm (*Pectinophora gossypiella*) and the cotton worm (*Alabama argillacea*) were the most destructive insect pests of cotton during the year. The former can be controlled by thoroughly fumigating seed cotton and cottonseed, and by strictly adhering to a closed season when all fields, gins, and warehouses are thoroughly cleansed of seed and all wild cotton and allied plants are destroyed. The cotton worm can be controlled by the use of Paris green. If available, calcium arsenate may be used. All seed cotton was daily fumigated as it was picked during the past season, and to date no trace of infestation has been found.

SUCROSE CONTENT OF SWEET POTATOES

In addition to the work with cane and cotton, the sucrose content of 113 varieties of sweet potatoes was determined, samples of three distinct plantings being analyzed. Samples from the first planting were tested as soon as they were harvested, and those from the other two plantings were tested after they had been stored for 38 days. As a rule, the sweet potatoes which were held in storage contained more sugar than did those tested at the time of harvest. The sugar content of the different varieties varied in general between 3.5 and 5 per cent, with individual extremes above and below these figures.

METEOROLOGICAL OBSERVATIONS

By A. BISSERUP

A hurricane traveling west-northwest passed just east of St. Croix August 28, 1924, doing little damage in St. Croix, but resulting in heavy rains. A rainfall of 16.88 inches was recorded at the station between August 28 and August 31. The storm struck St. Thomas, St. John, and the British island of Tortola, where it did considerable damage. The total rainfall for the year ended June 30, 1925, was 56.13 inches, and the heaviest rain for a 24-hour period, measured at 8 o'clock a. m., August 31, was 7.42 inches. The absolute maximum temperature of the year, 92° F., was recorded June 2, 1925; the absolute minimum temperature, 55° F., occurred on the night of February 5, 1925. On May 4, 1925, the hour of observation was changed from 8 o'clock a. m., to 4.30 p. m., at the suggestion of O. L. Fassig, meteorologist in charge of the Weather Bureau Office in San Juan, Porto Rico. Table 9 gives a summary of the meteorological data collected within the year.

TABLE 9.—*Condensed meteorological data for the fiscal year ended June 30, 1925*

Month	Temperature		Total rainfall	Average daily velocity of wind	Monthly evaporation
	Maximum	Minimum			
1924	*°F.*	*°F.*	*Inches*	*Miles*	*Inches*
July	87.6	74.7	4.43	58.8	8.168
August	88.0	74.6	19.79	50.2	6.438
September	86.9	72.6	5.72	[1] 11.0	5.358
October	87.8	72.7	5.62	18.0	5.883
November	85.7	72.5	3.87	20.7	3.882
December	83.7	70.5	4.84	33.5	4.197
1925					
January	82.8	69.7	1.99	36.9	4.762
February	82.8	64.0	1.39	18.3	4.570
March	83.3	67.0	2.33	40.4	6.125
April	84.3	70.3	3.28	26.7	6.673
May	87.2	73.5	.65	29.3	7.775
June	89.0	73.7	2.22	27.0	6.683

[1] The anemometer was blown down and rendered useless by high winds on Aug. 28. The new instrument was not installed until Sept. 23.

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